



Responding Responsibly:
Thematic Unit

Energy Exploration

Learning for Life and Work (SLD)

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Unit Title: Responding Responsibly

Sub Theme: Energy Exploration

Thinking Skill and Personal Capabilities: Thinking, Problem-Solving and Decision-Making

Curriculum Objective: To develop the young person as a contributor to the economy and environment

Key Elements: personal understanding, citizenship, ethical awareness, economic awareness, education for sustainable development

Attitudes and Dispositions: personal responsibility, concern for others, commitment-determination-resourcefulness, openness to new ideas, curiosity, community spirit, tolerance, integrity, respect

Learning Experiences: investigating & problem solving, linked to other curriculum areas, relevant * enjoyable, skills integrated, active and hands on, offers choice, challenging & engaging, supportive environment, positive reinforcement, ongoing reflection, enquiry-based

The Thematic Units connect the *Learning for Life and Work* subject strands of Personal Development, Local and Global Citizenship, Home Economics and Employability and demonstrate how they contribute to the understanding of a central theme. They provide a number of learning, teaching and assessment activities (and are accompanied by supporting resources) to help you address the key elements and statements of the revised Northern Ireland Curriculum.

Each Thematic Unit contributes to the statutory requirement for *Learning for Life and Work* and also links to other Areas of Learning. In addition, there are opportunities to develop learners' *Thinking Skills and Personal Capabilities*, incorporate *Assessment for Learning* principles and make connections to the *Cross Curricular Skills*.

The units are not intended to be prescriptive and are not the only way to approach the Northern Ireland Curriculum. You do not have to follow them rigidly. Instead, we encourage you to choose from the wide range of learning, teaching and assessment activities in the units and adapt and extend them as appropriate for your classes.

Statements of Minimum Requirement

These are the Statements of Minimum Requirement that are addressed in this unit:

Home Economics
Independent Living

Investigate a range of factors that influence consumer choices and decisions

Personal Development
Self-awareness

Explore personal morals, values and beliefs

Education for Employability
Work in the Local and Global Economy


Investigate how environmental considerations are affecting work and work practices

Local and Global Citizenship
Democracy and Active Participation

Investigate various ways to participate in school and society

Local and Global Citizenship
Democracy and Active Participation

Investigate an issue from a range of viewpoints and suggest action that might be taken to improve or resolve the situation

Key Question	Learning Intention Learners will have opportunities to ...	Possible Learning, Teaching and Assessment Activities	Skills and Capabilities
What is my energy?	... make simple calculations.	This will be a difficult concept for some learners to grasp, and it may require you to offer some significant direction at the beginning.	Make predictions, examine evidence, distinguish fact from opinion
		Together, discuss the activities they carry out throughout the day. Then using the images you've collected, ask your learners to identify parts of the body being used during these activities (for example walking = using legs and arms; writing = using arm, hand and fingers). • A collection of images of children taking part in various activities	Communication - Listen to and take part in discussions and explanations
		Explore with them how much energy an activity may need, and compare and rank a selection of pictures showing different activities.	
		Using Resource 1, have your learners match the type of energy to its purpose.  Resource 1: What Is Energy?	
		Make use of associated worksheets on a variety of energy topics, which are available via: www.cse.org.uk and www.actionrenewables.org/education/worksheets/download.htm	






Resource Sheet in this booklet



LAB or PowerPoint activity available from www.nicurriculum.org.uk


Skills tabs printed in **yellow** are Cross Curricular Skills



Skills tabs printed in **orange** are Thinking Skills and Personal Capabilities

Key Question	Learning Intention Learners will have opportunities to ...	Possible Learning, Teaching and Assessment Activities	Skills and Capabilities
Why do I need energy?	... reflect on what they have done and what they have learned.	<p>Discuss with the learners when they feel tired. Explain that our bodies need rest and we need to eat food.</p>	<p>Make links between cause and effect</p>
		<p>As a group, allow the learners to undertake the variety of physical activities shown on Resource 2 or 3. These range from those that use very little energy (brushing your hair) through to those that use a lot of energy (running fast). Allow them to record how tired they felt after each activity on Resource 2 and/or 3. Vary the activities to suit the group you have.</p> <p> Resource 2: How Tired Am I? (Table Record)</p> <p> Resource 3: How Tired Am I? (Graph Record)</p>	
		<p>Copy and cut out the activity cards in Resource 4. Then allow your learners to sort the activity cards into little energy and lots of energy. The level of sort will depend on each learner's ability.</p> <p> Resource 4: Little or Lots? (Activity Cards)</p>	



Key Question	Learning Intention Learners will have opportunities to ...	Possible Learning, Teaching and Assessment Activities	Skills and Capabilities
Where do I get energy from?	... explore how humans get energy from food.	<p>Explain that humans get energy from food. Provide your learners with the cereal and food packets that show energy content and, together, investigate which foods give the most energy.</p> <ul style="list-style-type: none"> • A collection of cereal and food packages 	Make predictions, examine evidence, distinguish fact from opinion
		<p>Plan meals based on energy content and healthy eating, for example:</p> <ul style="list-style-type: none"> - a meal for a mountain climber; or - a meal for a day at home watching TV. 	Communication - Use non-verbal methods to express ideas and engage with the listener

Key Question	Learning Intention Learners will have opportunities to ...	Possible Learning, Teaching and Assessment Activities	Skills and Capabilities
What other things need energy?	... investigate how energy comes from a range of sources.	<p><i>You can make links to Science by: Explaining that plants get energy from sunlight, store energy and use some for growing. Some animals eat the plants to get energy.</i></p>	Communication - Contribute comments and ask questions
		<p><i>Allowing your learners to create an energy chain by sequencing the picture cards. This also presents an opportunity for display work.</i></p> <ul style="list-style-type: none"> • A collection of images that depict an energy chain 	Using ICT - Consider the sources and resources used
		<p><i>You can make links to Design and Technology by: Together discussing a range of battery operated toys. Focused questions might include:</i></p> <ul style="list-style-type: none"> - How do the toys work (for example light up, make a noise, move)? - What happens when you take the battery out, in, switch on or off? - What would happen if you left one of the toys on all day? <p><i>Explain that toys work by using energy stored in the batteries. Then, using Resource 5, allow your learners to sort the cards into battery and non-battery operated objects.</i></p> <div></div> <p>Resource 5: Battery Cards</p> <ul style="list-style-type: none"> • A collection of battery operate toys 	
		<p>Using Resource 6, allow your learners to link the activity depicted on the sheet to its source of energy.</p> <div></div> <p>Resource 6: Energy Sources</p>	

Key Question	Learning Intention Learners will have opportunities to ...	Possible Learning, Teaching and Assessment Activities	Skills and Capabilities
<p>What other things need energy?</p>		<p>Copy and cut out the flash cards provided in Resource 7. Allow your learners to sort the cards by pairing the activity to its energy source.</p> <p> Resource 7: Energy Source (Flash Cards)</p> <p>Hold a race using clockwork items (toys if appropriate). Wind the toys up by varying amounts (i.e. fully wound and partly wound). How far do they walk compared to how far they were wound?</p> <p>You can extend this energy comparison by using balloon 'toys' and/or paper airplanes.</p> <ul style="list-style-type: none"> • A collection of clockwork toys/items 	

Key Question	Learning Intention Learners will have opportunities to ...	Possible Learning, Teaching and Assessment Activities	Skills and Capabilities
How do we use energy?	... to communicate information in a variety of ways.	<p>Show your learners pieces of coal and explain that energy is stored in coal and can be used to make electricity. Where appropriate, some may be able to research how electricity is transferred to schools through power cables, etc.</p> <ul style="list-style-type: none"> • Pieces of coal • A collection of images of power cables, pylons and electrical poles 	Make predictions, examine evidence, distinguish fact from opinion
		<p>List the number of items in the school that use electricity, for example light bulbs, computers, TV, etc. Then, copy and cut the cards in Resource 8 and ask your learners to sort the items into the two categories: items that use electricity and those that do not need electricity.</p> <p> Resource 8: Electrical Item Cards</p>	Using Mathematics - Interpret, organise and present information in mathematical formats
		<p><i>You can link to Using Mathematics by:</i> <i>Creating block graphs, pictograms, etc. to record the number of items using electricity.</i></p>	
		<p>Together, focus on lights using the following focused questions:</p> <ul style="list-style-type: none"> - How many lights are there all together? - When are they used? - Are all the light bulbs the same? - What is a low energy light bulb? 	
		<p>Complete Resource 9 to consider which electrical items are used for which purposes in the home.</p> <p> Resource 9: How Do You Use Energy?</p> <p><i>You can link to Art & Design by:</i> <i>Creating a collage of items that use electricity.</i></p> <ul style="list-style-type: none"> • Art materials 	


Key Question	Learning Intention Learners will have opportunities to ...	Possible Learning, Teaching and Assessment Activities	Skills and Capabilities
Why should we save energy?	... contribute to the gathering of information.	<p>Use a 'thought board' to generate questions from your learners. You can revisit these questions during and at the end of the topic. Help make links between questions and identify a problem with energy use. For example, propose to your learners that we need to cut down on our energy use in order to:</p> <ul style="list-style-type: none"> - save money; and - save the environment. <p>Visit the websites noted below to access topical games and worksheets on saving energy:</p> <p>www.epatrol.org/eg-energy.html Learners click on different items to see how energy can be saved in the rooms of the home</p> <p>www.think-energy.co.uk/ThinkEnergy/11-14/activities/HouseActivity.asp Learners drag items into rooms in a house to make it more energy efficient</p> <p>www.cse.org.uk/cgi-bin/energymatters.cgi See the worksheet listed under Key Stage 2 Unit 8B titled: 10 Easy Ways</p> <p>www.sei.ie Select primary school option from homepage to access worksheets on energy</p>	Use different types of questions

Key Question	Learning Intention Learners will have opportunities to ...	Possible Learning, Teaching and Assessment Activities	Skills and Capabilities
How can we save energy?	... make simple predictions ... use simple information sources to answer questions.	Together, focus on lights and discuss with your learners possible solutions for saving energy. Ideas might include: <ul style="list-style-type: none"> - using low energy light bulbs; or - switching lights off when they are not needed. 	Make predictions, examine evidence, distinguish fact from opinion
		Allow your learners to examine your school's environment. Ask them to identify areas where energy is wasted. This might include lights being left on, appliances left on standby, kettles being overfilled, items not being recycled, or taps not turned off correctly, etc.	Using Mathematics - Identify and collect information
		 Resource 10: School Energy Survey	
		Discuss the problems they observe and ask them to record the data by taking photographs. <ul style="list-style-type: none"> • Digital camera 	
		Where appropriate, ask your learners to spend one day or week auditing whether lights are being used appropriately in your school.	
		Ask them to present their investigation findings to the rest of the class. Alternatively, allow them to make posters to encourage greater energy awareness. <ul style="list-style-type: none"> • Art materials 	
		Provide them with Resource 11 and ask them to complete the sheet by matching the activity that wastes energy to the energy saving solution.	
		 Resource 11: What Can You Do to Save Energy?	

Key Question	Learning Intention Learners will have opportunities to ...	Possible Learning, Teaching and Assessment Activities	Skills and Capabilities
<p>How can we save energy?</p>		<p>Alternatively, provide them access to the web resources below:</p> <p>www.epatrol.org/ep-energy.html Learners click on different items to see how energy can be saved in the rooms of the home</p> <p>www.cse.org.uk/cgi-bin/energymatters.cgi See the worksheet listed under Key Stage 2 Unit 8B titled: 10 Easy Ways</p> <p>www.sei.ei</p>	

Key Question	Learning Intention Learners will have opportunities to ...	Possible Learning, Teaching and Assessment Activities	Skills and Capabilities
<p>What can we do about energy waste?</p>	<p>... identify simple solutions.</p>	<p>Begin a discussion on how the learners can help prevent energy waste, and help them come up with possible solutions. These might include:</p> <ul style="list-style-type: none"> - creating an energy committee at school; - using energy saving light bulbs; - starting an awareness raising campaign; - putting up posters around the school; - placing reminder signs next to light switches, etc; or - giving awards and certificates to the class that saves the most energy. <p>• Art materials</p>	<p>Examine options, weigh up pros and cons</p> <p>Communication - Listen to and take part in discussions, explanations and presentations</p>

Key Question	Learning Intention Learners will have opportunities to ...	Possible Learning, Teaching and Assessment Activities	Skills and Capabilities
How can we share what we've learned?	... communicate ideas in a number of ways.	Together, discuss how they could share their ideas about saving energy with other schools, shops, and/or businesses.	Examine options, weigh up pros and cons
		<i>You can link to Art & Design by: Having them create posters about saving energy.</i> <ul style="list-style-type: none"> • Art Materials 	Communication - Communicate information, ideas and opinions using an expanding language
		<i>You can link to Literacy by: Writing a group letter to local shops and businesses outlining their ideas for saving energy.</i>	

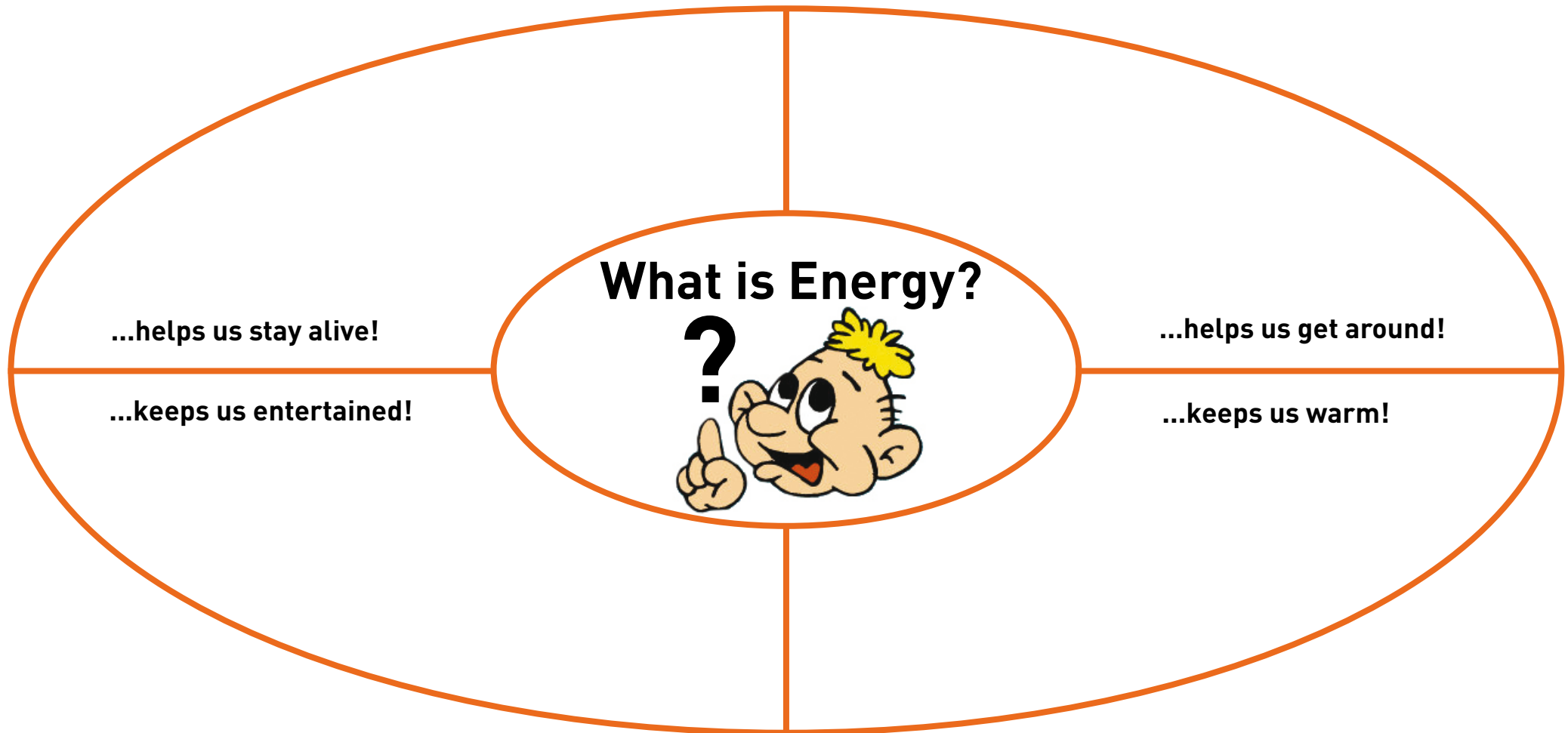
Key Question	Learning Intention Learners will have opportunities to ...	Possible Learning, Teaching and Assessment Activities	Skills and Capabilities
<p>How effective have we been?</p>	<p>... record observations.</p>	<p>Help your learners to evaluate solutions by using before and after photographs. This can be solely with the focus on lights or extended to:</p> <ul style="list-style-type: none"> - double glazing; - doors left open; - lights left on; - low energy light bulbs fitted; - reflective panels at radiators; - signs; - leaking taps; - thermostats on radiators; or - equipment turned off (not on standby). <p>• Cameras</p> <p>2. Using PPoint 1, allow your learners to determine the energy saving solution.</p> <p> Energy PPoint1: Choices</p>	<p>Generate possible solutions, try out alternative approaches, evaluate outcomes</p> <p>Using ICT - Investigate, make predictions and solve problems through interaction with digital tools</p> <p>Communication - Communicate information, ideas, opinions and feelings using an expanding vocabulary</p>

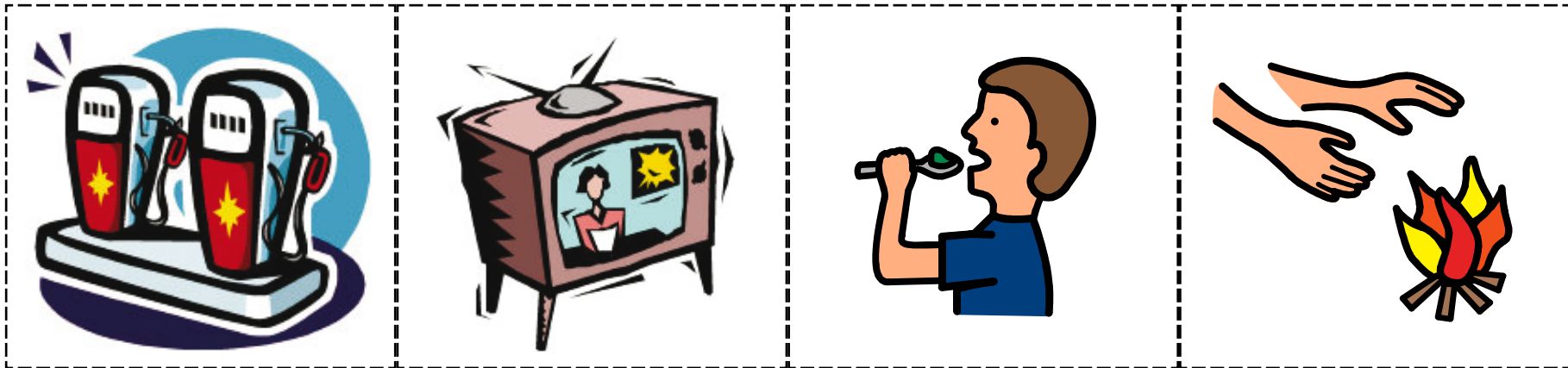
Resources

What Is Energy? (1 of 2)

Resource 1

What does 'energy' mean? How does it help us in life? Find pictures of different types of energy (or use those provided overleaf) to show different types of energy. Then add them to the correct space.


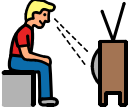





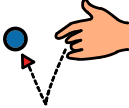




How Tired Am I? (Table Record)

Resource 2

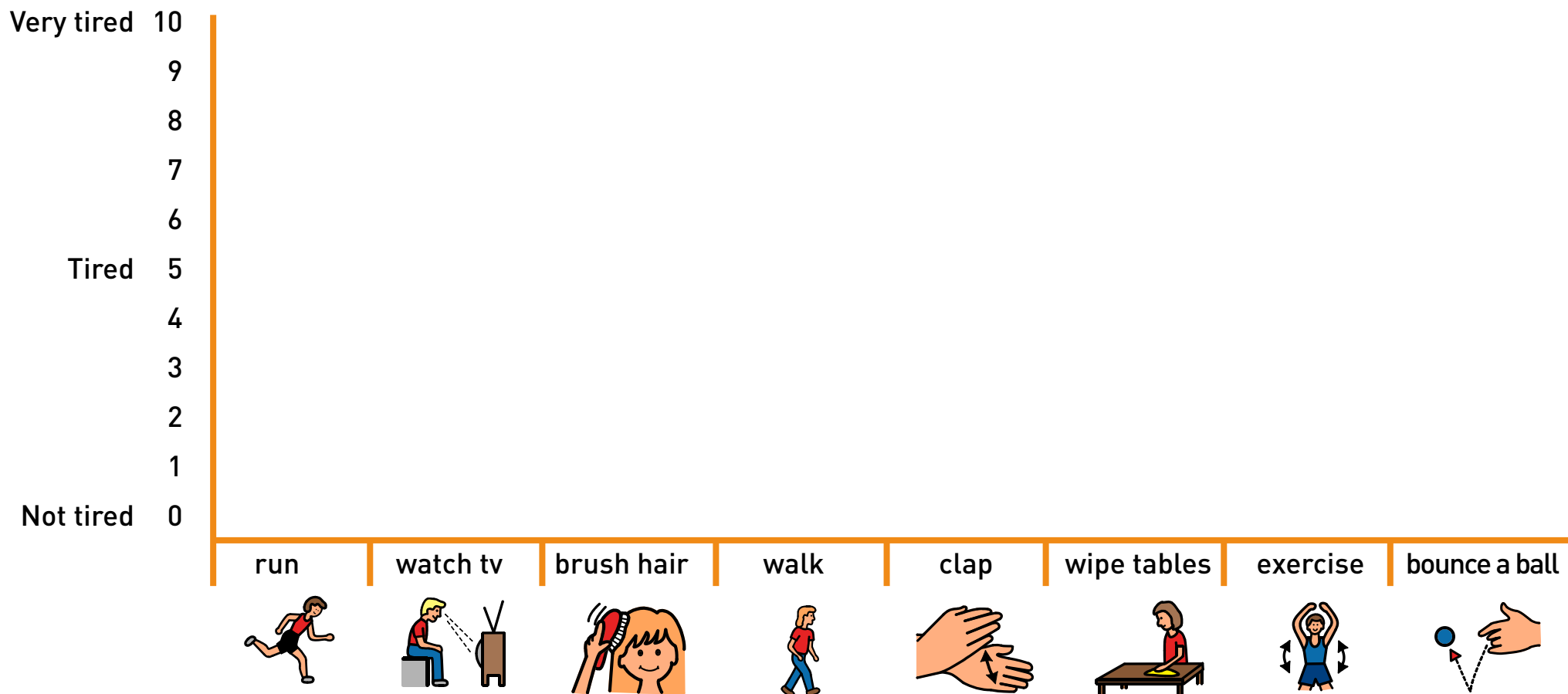
Try these activities and decide how tired you feel afterwards.
Give yourself a score out of 10 where 1 is 'not tired' and 10 is 'very tired'.

Activity		How tired I feel (1 -10)
run		
watch TV		
brush hair		
walk		
clap		
wipe tables		
exercise		
bounce a ball		

How Tired Am I? (Graph Record)

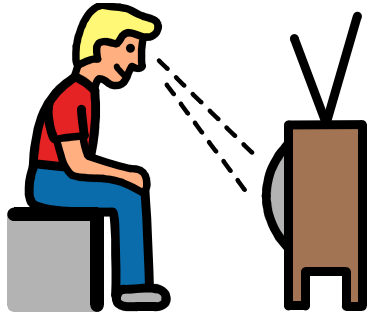
Resource 3

How tired do these activities make you feel? Decide if they make you feel very tired, tired or not tired and mark it on the graph.

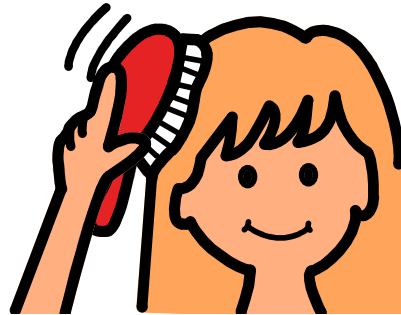


Little or Lots? (Activity Cards)

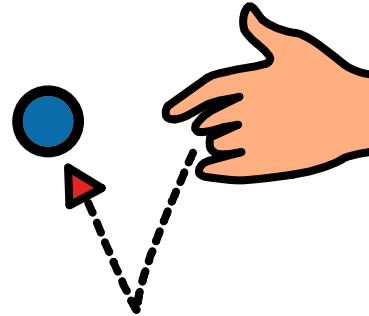
Resource 4



watch TV



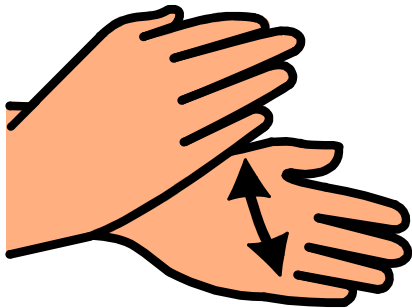
brush hair



bounce a ball



run



clap



exercise



wipe tables



walk

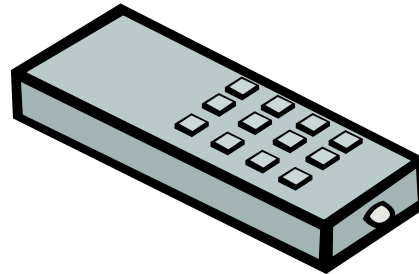
Battery Cards (1 of 2)

Resource 5

Copy to card and cut out. Then, sort the cards into battery and non-battery operated objects.



mobile phone



remote control



watch



television



CD player



lighter

Battery Cards (2 of 2)**Resource 5**

Copy to card and cut out. Then, sort the cards into battery and non-battery operated objects.



dartboard



camera



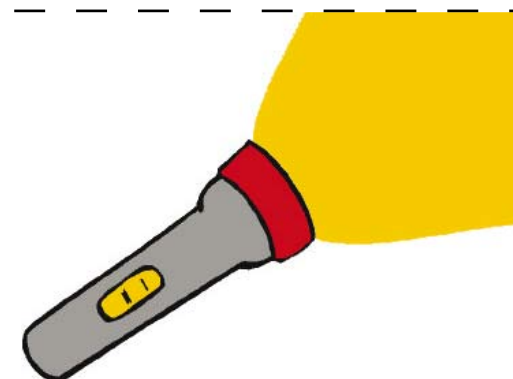
guitar



maracas



toaster



torch

Energy Sources

Resource 6

Match the item to its energy source. Draw a line from the item to the correct source of energy.

flowers



wind



car



electricity



hand-held windmill



food



runner



sun



TV



petrol

Energy Source (Flash Cards)

Resource 7

Copy to card and cut out the cards. Then sort the cards by pairing the activity to its energy source.



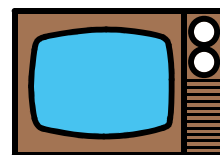
runner



car



surf



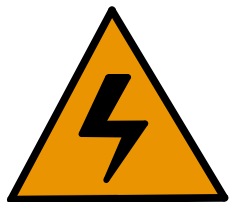
TV



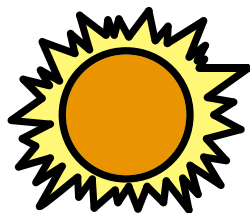
flower



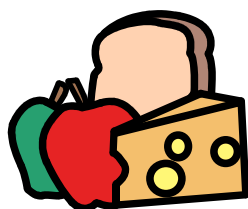
music player



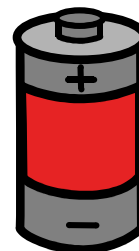
electricity



sun



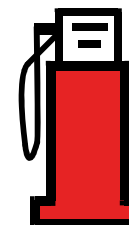
food



battery



wind



petrol

Electrical Items Cards (1 of 2)

Resource 8

Copy to card and cut out. Then, sort the items shown into two groups: those that use electricity to operate and those that don't.



bicycle



hose



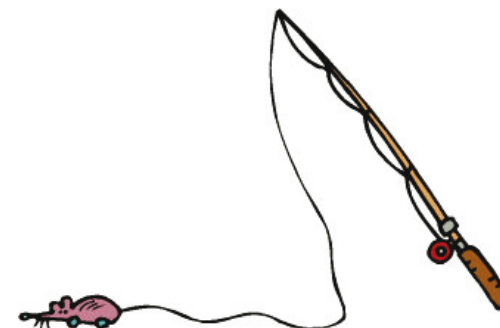
microwave



computer



washing machine



fishing rod

Electrical Items Cards (2 of 2)**Resource 8**

Copy to card and cut out. Then, sort the items shown into two groups: those that use electricity to operate and those that don't.



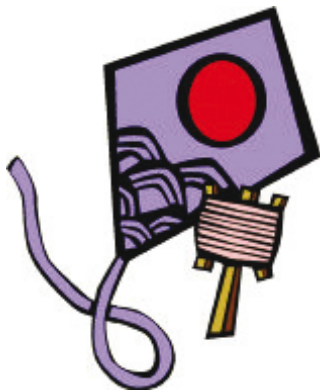
vacuum cleaner



skateboard



hairdryer



kite



lamp





mop

How Do You Use Energy?

Resource 9




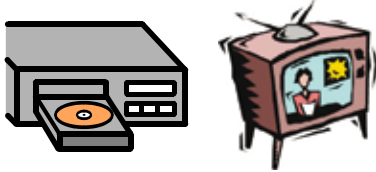
Draw pictures in the table below to show the ways in which you use energy at home.

Used for...	Item used
heating	
lighting	
entertaining	
cooking	
washing	

School Energy Survey

Resource 10

Walk around the school. How many times can you find these things happening?

Action	Number
lights left on when room empty 	
recyclable waste in bin 	
taps left running 	
TV/CD players left on 	

The biggest waste of energy in school is _____

This could be helped by _____

What Can You Do to Save Energy?

Resource 11

Draw a line to match the 'energy wasting' to the 'energy saving' pictures.

the TV is left on.



dry clothes in a tumble dryer.



use an ordinary light bulb.



leave the window open.



leave tap running while brushing teeth.



dry clothes outside.



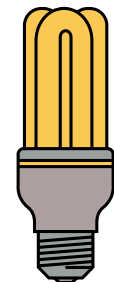
close the curtains in the evening.



turn tap off when brushing teeth.



switch off the TV.



change to an energy saving bulb.



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